C-A OPERATIONS PROCEDURES MANUAL

4.120.18.i RHIC Roll-Up Tests

Text Page 2

Hand Processed Changes

HPC No.	Date	Page Nos.	Initials

Approved: ***Signature on File*** _____
Collider-Accelerator Department Chairman Date

V. Castillo

PASS ANNUAL ACCEPTANCE TEST PROTOCOL

Division A Software Filename and Checksum: Title:_____ Checksum: _____

Division B Software Filename and Checksum: Title:_____ Checksum: _____

Initial testing complete:

Test Team Leader's Name (Print): _____ Life Number: _____

Test Team Leader's Name (Sign): _____ Date: _____/____/_____

Acceptance test procedure complete (following repairs and retesting if required):

Test Team Leader's Name (Print): _____ Life Number:_____

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Test results reviewed by:

Safety Section Head's Name (Print):_____ Life Number: _____

Safety Section Head's Name (Sign):_____ Date: _____/____/_____

Test results accepted by Radiation Safety Committee:

RSC Member's Name (Print):_____ Life Number: _____

RSC Member's Name (Sign):_____ Date: _____/____/_____

1.1 Confirm RF Supplies Enable in MODE 24

□	**VERIFY**	**RF Transfer** key is in **MCR** and is	**CAPTURED**
	PLACE	**Peer 9** in **Controlled Access (Mode 16)**	
□	**VERIFY**	**MCR** sees **Peer 9** is in	**MODE 16**
	CLOSE	Gate: **5GS1**	
	RESET	Gates: **3GI1, 3EL1, 4MD1, 4GE1, 4MD2, 4GE2, 4GI1, 4EL1, 4GE3, 4ED1**	
□	**VERIFY**	Gates: **3GI1 □, 3EL1 □, 4MD1 □, 4GE1 □, 4MD2 □, 4GE2 □, 4GI1 □, 4EL1 □, 4GE3 □, 4ED1 □**are	**RESET**
	SWEEP	Zones: **4Z1** and **4Z2**	
□	**VERIFY**	Zones: **4Z1** □ and **4Z2** □	**SWEEP OK**
□	**VERIFY**	3 ea **#10 RF CA** keys and 2 ea **#11 RF Sweep** keys are	**CAPTURED**
□	**VERIFY**	**RF Key Tree Complete** indicator is	**ON**
□	**VERIFY**	**RF Reset** indicator is	**OFF**
□	**VERIFY**	**MCR** sees on **Summary Page CD1: A Div □, B Div □**	**SAFE**
□	**VERIFY**	**MCR** sees on **Summary Page CD2: A Div □, B Div □**	**SAFE**
	PLACE	**Peer 9** in **NO Access (Mode 24)**	
□	**VERIFY**	**MCR** sees **Peer 9** is in	**MODE 24**
□	**VERIFY**	**MCR** sees on **Summary Page CD1: A Div □, B Div □**	**ENABLED**
□	**VERIFY**	**MCR** sees on **Summary Page CD2: A Div □, B Div □**	**ENABLED**
	REMOVE	**LOTO** from **ACS Ckt Bkr Lockout Box (ACLB)**	
□	**VERIFY**	**ACLB** is	**NO LOTO**
□	**VERIFY**	**In Table-1 below, MCR** sees on **RF Critical Devices page**	

RF Power Supply	**Verify for CD1-AC contator RB goes from SAFE to OFF**		**Verify for CD2-DC Ross RB goes from SAFE to OFF**		**Turn ON Ckt Bkr for RF PS**	**Verify for RF Rchback C kt. Bkr. is ON**	
	A - Div	**B - Div**	**A - Div**	**B - Div**		**A - Div**	**B - Div**
Y04 – CAVA 3.1	□	□	□	□		□	□
Y04 – CAVA 3.2	□	□	□	□		□	□
B14 – CAVA 3.1	□	□	□	□		□	□
B14 – CAVA 3.2	□	□	□	□		□	□
Y04 – CAVS 3.1	□	□	□	□		□	□
Y04 – CAVS 3.2	□	□	□	□		□	□
Y04 – CAVS 3.3	□	□	□	□		□	□
B14 – CAVS 3.1	□	□	□	□		□	□
B14 – CAVS 3.2	□	□	□	□		□	□
B14 – CAVS 3.3	□	□	□	□		□	□
G4 – CAVSX 1	□	□	□	□		□	□

RF Power Supply	Verify for CD1-AC contator RB goes from SAFE to OFF		Verify for CD2-DC Ross RB goes from SAFE to OFF		Turn ON Ckt Bkr for RF PS	Verify for RF Rchback Ckt. Bkr. is ON	
	A - Div	B - Div	A - Div	B - Div		A - Div	B - Div
G4 – CAVSX 2	□	□	□	□		□	□
G4 – CAVSX 3	□	□	□	□		□	□
G4 – CAVSX 4	□	□	□	□		□	□

Table – 1: Verification of CD1, CD2 and RF Power supplies Enabled in Mode 24

□ **Check for confirmation RF Supplies Enable is possible in Mode 24.**

.

1.3 Confirm delay between disabling RF CD1 and RF CD2 is > 2 secs and < 4 secs

	PLACE	**Peer 9** in **NO Access (Mode 24)**	
□	**VERIFY**	**MCR** sees **Peer 9** is in	**MODE 24**
□	**VERIFY**	**MCR** sees on **Summary Page CD1: A Div □, B Div □**	**ENABLED**
□	**VERIFY**	**MCR** sees on **Summary Page CD2: A Div □, B Div □**	**ENABLED**
□	**VERIFY**	In RF Crit. Dev. Encl. **1004A** A1 **outputs: 0 =CD1 & 1 = CD2** are	**ON**
□	**VERIFY**	In RF Crit. Dev. Encl. **1004A** B1 **outputs: 0 =CD1 & 1 = CD2** are	**ON**
	REMOVE	**Key** from **RF Key tree**	
□	**VERIFY**	Time **delay** between A1 **output 0 & 1** going **OFF** is	**>2 & <4 secs**
□	**VERIFY**	Time **delay** between B1 **output 0 & 1** going **OFF** is	**>2 & <4 secs**

□ **Check for confirmation of delay between disabling RF CD1 and RF CD2 is > 2 secs and < 4 secs**

END OF TEST PROCEDURE

TTL: Sign for completion of initial testing: _____

Date: _____/____/_____

TTL: Sign for completion of final testing: _____

Date: _____/_____/_____

PASS ANNUAL ACCEPTANCE TEST PROTOCOL

Division A Software Filename and Checksum: Title:_____ Checksum: _____

Division B Software Filename and Checksum: Title:_____ Checksum: _____

Initial testing complete:

Test Team Leader's Name (Print): _____Life Number:_____

Test Team Leader's Name (Sign): _____Date:_____/_____/_____

Acceptance test procedure complete (following repairs and retesting if required):

Test Team Leader's Name (Print): _____ Life Number:_____

Test Team Leader's Name (Sign): _____Date:_____/_____/_____

Test results reviewed by:

Safety Section Head's Name (Print):_____ Life Number:_____

Safety Section Head's Name (Sign):_____Date:_____/_____/_____

Test results accepted by Radiation Safety Committee:

RSC Member's Name (Print):_____Life Number: _____

RSC Member's Name (Sign):_____Date:_____/_____/_____

1.1 Confirm to ACS Interface Panel (AIP) Enable of Injection RchBack Critical Devices: PSUarc8 and PSWarc20 in Mode 24 is possible

	STATION	**ACS Person at A-Hse** (PSUarc8) **and 1000P** (PSWarc20)	
	PLACE	**Peers 5, 7, 9, 11, 13, 15, 17** in **Controlled Access (Mode16)**	
□	**VERIFY**	**MCR** sees **Peers 5 □, 7 □, 9 □, 11 □, 13 □, 15 □, 17 □** is in	**MODE 16**
	SWEEP	**All RHIC Zones**	
□	**VERIFY**	**All RHIC Zones** are	**SWEEP OK**
□	**VERIFY**	At A-Hse **PSUarc8 Enable** red bullseye on **AIP** is	**OFF**
□	**VERIFY**	At 1000P **PSWarc20 Enable** red bullseye on **AIP** is	**OFF**
□	**VERIFY**	**MCR** sees on **CD** page: **Rhic Injn U/W**	**DISABLED**
	PLACE	**Peers 5, 7, 9, 11, 13, 15, 17** in **No Access (Mode24)**	
□	**VERIFY**	**MCR** sees **Peers 5 □, 7 □, 9 □, 11 □, 13 □, 15 □, 17 □** is in	**MODE 24**
□	**VERIFY**	At A-Hse **PSUarc8 Enable** red bullseye on **AIP** is	**ON**
□	**VERIFY**	At 1000P **PSWarc20 Enable** red bullseye on **AIP** is	**ON**
□	**VERIFY**	**MCR** sees on **CD** page: **Rhic Injn U/W**	**ENABLED**

□ **Check for acceptance of Confirm to ACS Interface Panel (AIP) Enable of Injection RchBack Critical Devices: PSUarc8 and PSWarc20 in Mode 24 is possible**

1.2 Confirm opening a gate into the RHIC ring disables RHIC Injection Critical Devices & RHIC Critical Devices

	STATION	**ACS person at 1000P**	
□	**VERIFY**	**MCR** sees **Peers 5 □, 7 □, 9 □, 11 □, 13 □, 15 □, 17 □** in	**MODE 24**
□	**VERIFY**	**MCR** sees **Permit Link** for **Peers 7 □, 9 □, 11 □, 13 □, 15 □, 17 □**	**ENABLED**
□	**VERIFY**	At 1000P **PSSwm Enable** red bullseye on **AIP** is	**ON**
□	**VERIFY**	At 1000P **PSXarc90 Enable** red bullseye on **AIP** is	**ON**
□	**VERIFY**	At 1000P **PSYarc90 Enable** red bullseye on **AIP** is	**ON**
□	**VERIFY**	**MCR** sees on **CD** page: **Rhic Injn X/Y**	**ENABLED**
□	**VERIFY**	**A Div** relay # **57 □** and **B Div** relay # **59 □** in **encl 5602-1** in 1000P	**ON**
	PRESS	**RHIC Primary Beam Stop Withdraw** in **MCR**	
□	**VERIFY**	**MCR** sees Primary Beam Shutters**: G1BS, G2BS**	**OUT**
□	**VERIFY**	**MCR** sees RchBack Beam Shutter**: G3BS**	**OUT**
	FOLLOW	Table – 1 **below, pg 3**	

Gate	Open then Close	Verify Peer moves to Mode 2	Verify Sweep lost	Verify Rhic Ijn CDs Disab. & B/eyes OFF	Verify RhBack CDs OK	Verify Rhic Ring BS G1& G2 IN	Verify Rhic Ring RhBack BS G3 OUT	Verify Permit Link Disab.	Verify relays 57&59 OFF	Verify attempt to w/draw BS G1 & G2 FAIL	Force Sweep	Go to Mode 24	Verify Permit Link Enab.	Verify Rhic Ijn CDs Enab. & B/eyes ON	W/draw Rhic Ring BS G1 & G2	Go to next gate
12GE1		□	□	□	□	□	□	□	□	□			□	□		
2GE1		□	□	□	□	□	□	□	□	□			□	□		
2GE2		□	□	□	□	□	□	□	□	□			□	□		
4GE2		□	□	□	□	□	□	□	□	□			□	□		
4GE3		□	□	□	□	□	□	□	□	□			□	□		
5GE1		□	□	□	□	□	□	□	□	□			□	□		
YGI1		□	□	□	□	□	□	□	□	□			□	□		
6GE2		□	□	□	□	□	□	□	□	□			□	□		
XGI1		□	□	□	□	□	□	□	□	□			□	□		
6GE3		□	□	□	□	□	□	□	□	□			□	□		
7GE1		□	□	□	□	□	□	□	□	□			□	□		
8GE1		□	□	□	□	□	□	□	□	□			□	□		
8GE2		□	□	□	□	□	□	□	□	□			□	□		
10GE1		□	□	□	□	□	□	□	□	□			□	□		**End of test**

Table – 1: Test of gate-opening into the RHIC ring disables RHIC Injection Critical Devices & RHIC Critical Devices

□ **Check for confirmation of opening a gate into the RHIC ring disables RHIC Injection Critical Devices & RHIC Critical Devices**

END OF TEST PROCEDURE

TTL: Sign for completion of initial testing: _____

Date: _____/____/_____

TTL: Sign for completion of final testing: _____

Date: _____/____/_____

PASS ANNUAL ACCEPTANCE TEST PROTOCOL

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Division B Software Filename and Checksum: Title:_____ Checksum: _____

Initial testing complete:

Test Team Leader's Name (Print): _____Life Number:_____

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Acceptance test procedure complete (following repairs and retesting if required):

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Test Team Leader's Name (Sign): _____Date:_____/_____/_____

Test results reviewed by:

Safety Section Head's Name (Print):_____ Life Number:_____

Safety Section Head's Name (Sign):_____Date:_____/_____/_____

Test results accepted by Radiation Safety Committee:

RSC Member's Name (Print):_____Life Number: _____

RSC Member's Name (Sign):_____Date:_____/_____/_____

1.1 Confirm interrupting readback signal from PSSWM causes a Rchback; restore operation

	PLACE	**Peers 7, 9, 11, 13, 15, 17** in **Restricted Access (Mode 8)**	
□	**VERIFY**	**MCR** sees **Peers 7 □, 9 □, 11 □, 13 □, 15 □, 17 □** is in	**MODE 8**
□	**VERIFY**	**MCR** sees: **PSUARC8 □, PSWARC20 □** are	**DISABLED**
	REMOVE	Readback relay, **K1,** for **PSSWM** in CD Inface Box for **X,Y& SwM encl 5611**in **1000P**	
□	**VERIFY**	**MCR** sees **Div A □, Div B □**	**Reachback**
□	**VERIFY**	**MCR** sees: **PSUARC8 □, PSWARC20 □** are	**DISABLED**
	REPLACE	Readback relay, **K1,** for **PSSWM** in CD Inface Box for **X,Y& SwM encl 5611**in **1000P**	
	RESET	**Reachback in MCR**	
□	**VERIFY**	**MCR** sees **Div A □, Div B □ RchBack**	**Reachback OK**
□	**VERIFY**	**MCR** sees: **PSUARC8 □, PSWARC20 □** are	**DISABLED**

□ **Check for confirmation of interrupting readback signal from PSSM causes a Rchback; restore operation**

1.2 Confirm interrupting readback signal from PSXARC90 causes a Rchback; restore operation

	PLACE	**Peers 7, 9, 11, 13, 15, 17** in **Restricted Access (Mode 8)**	
□	**VERIFY**	**MCR** sees **Peers 7 □, 9 □, 11 □, 13 □, 15 □, 17 □** is in	**MODE 8**
□	**VERIFY**	**MCR** sees: **PSUARC8 □, PSWARC20 □** are	**DISABLED**
	REMOVE	Readback relay, **K2,** for **PSXARC90** in CD Inface Box for **X,Y& SwM, encl 5611**in **1000P**	
□	**VERIFY**	**MCR** sees **Div A □, Div B □**	**Reachback**
□	**VERIFY**	**MCR** sees: **PSUARC8 □, PSWARC20 □** are	**DISABLED**
	REPLACE	Readback relay, **K2,** for **PSXARC90** in CD Inface Box for **X,Y& SwM, encl 5611**in **1000P**	
	RESET	**Reachback in MCR**	
□	**VERIFY**	**MCR** sees **Div A □, Div B □ RchBack**	**Reachback OK**
□	**VERIFY**	**MCR** sees: **PSUARC8 □, PSWARC20 □** are	**DISABLED**

□ **Check for confirmation of interrupting readback signal from PSXARC90 causes a Rchback; restore operation.**

1.3 Confirm interrupting readback signal from PSYARC90 causes a Rchback; restore operation

	PLACE	**Peers 7, 9, 11, 13, 15, 17** in **Restricted Access (Mode 8)**	
□	**VERIFY**	**MCR** sees **Peers 7 □, 9 □, 11 □, 13 □, 15 □, 17 □** is in	**MODE 8**
□	**VERIFY**	**MCR** sees: **PSUARC8 □, PSWARC20 □** are	**DISABLED**
	REMOVE	Readback relay, **K3,** for **PSYARC90** in CD Inface Box for **X,Y& SwM, encl 5611**in **1000P**	
□	**VERIFY**	**MCR** sees **Div A □, Div B □**	**Reachback**
□	**VERIFY**	**MCR** sees: **PSUARC8 □, PSWARC20 □** are	**DISABLED**
	REPLACE	Readback relay, **K3,** for **PSYARC90** in CD Inface Box for **X,Y& SwM, encl 5611**in **1000P**	
	RESET	**Reachback in MCR**	
□	**VERIFY**	**MCR** sees **Div A □, Div B □ RchBack**	**Reachback OK**
□	**VERIFY**	**MCR** sees: **PSUARC8 □, PSWARC20 □** are	**ENABLED**

□ **Check for confirmation of interrupting readback signal from PSYARC90 causes a Rchback; restore operation**

1.4 Confirm normal operation of Primary & Rchback Beam Stops in Mode 24

	PLACE	**Peers 5** in **Controlled Access (Mode16)**	
□	**VERIFY**	**MCR** sees **Peers 5** is in	**MODE 16**
	SWEEP	**Zones: W, X & Y**	
□	**VERIFY**	**Zones: W, X & Y**are	**SWEEP OK**
□	**VERIFY**	**4 ea #12 Inj CA** keys and **2 ea #13 Inj Sweep** keys are	**CAPTURED**
	PLACE	**Peer 5** in **No Access (Mode 24)**	
□	**VERIFY**	**Peer 5** is in	**MODE 24**
□	**VERIFY**	**MCR** sees **PSUARC8**	**ENABLED**
□	**VERIFY**	**MCR** sees **PSWARC20**	**ENABLED**
	PLACE	**Peers 7, 9, 11, 13, 15, 17** in **Controlled Access (Mode 16)**	
□	**VERIFY**	**MCR** sees **Peers 7 □, 9 □, 11 □, 13 □, 15 □, 17 □** in	**MODE 16**
	SWEEP	**All RHIC Zones**	
□	**VERIFY**	**All RHIC Zones** are	**SWEEP OK**
□	**VERIFY**	24 ea **#14 RHIC CA** keys & 6 ea **#15 RHIC Sweep** keys are	**CAPTURED**
□	**VERIFY**	3 ea **#10 RF CA** keys and 2 ea **#15 RF Sweep** keys are	**CAPTURED**
	PLACE	**Peer 7, 9, 11, 13, 15, 17** in **No Access (Mode 24)**	
□	**VERIFY**	**MCR** sees **Peers 7 □, 9 □, 11 □, 13 □, 15 □, 17 □** in	**MODE 24**
□	**VERIFY**	**MCR** sees Primary Beam Stops: **G1BS □, G2BS □**	**IN**
□	**VERIFY**	**MCR** sees Rchback Beam Stop: **G3BS**	**OUT**
□	**VERIFY**	**Visually** through viewport Prim Beam Stop **G12-bsx.1** is	**IN**
□	**VERIFY**	**Visually** through viewport Prim Beam Stop **G12-bsx.2** is	**IN**
□	**VERIFY**	**Visually** through viewport Rchback Beam Stop **G12-bsx.3** is	**OUT**

	PRESS	**Beam Stop Withdraw Button** at **MCR**	
□	**VERIFY**	**MCR** sees Primary Beam Stops: **G1BS □, G2BS □**	**OUT**
□	**VERIFY**	**MCR** sees Rchback Beam Stop: **G3BS**	**OUT**
□	**VERIFY**	**Visually** through viewport Prim Beam Stop **G12-bsx.1** is	**OUT**
□	**VERIFY**	**Visually** through viewport Prim Beam Stop **G12-bsx.2** is	**OUT**
□	**VERIFY**	**Visually** through viewport Rchback Beam Stop **G12-bsx.3** is	**OUT**
	REMOVE	Any **CA key** from the **RHIC key tree**	
□	**VERIFY**	**MCR** sees **Peers 7 □, 9 □, 11 □, 13 □, 15 □, 17 □** is in	**MODE 2**
□	**VERIFY**	**MCR** sees Primary Beam Stops: **G1BS □, G2BS □**	**IN**
□	**VERIFY**	**MCR** sees Rchback Beam Stop: **G3BS**	**OUT**
□	**VERIFY**	**Visually** through viewport Prim Beam Stop **G12-bsx.1** is	**IN**
□	**VERIFY**	**Visually** through viewport Prim Beam Stop **G12-bsx.2** is	**IN**
□	**VERIFY**	**Visually** through viewport Rchback Beam Stop **G12-bsx.3** is	**OUT**

□ **Check for confirmation of normal operation of Primary & Rchback Beam Stops in Mode 24**

1.5 Confirm removing readback signal from Prim Beam Stop G12-bsx.1 causes a reachback; clear reachback

	PLACE	**Peers 7, 9, 11, 13, 15, 17** in **Restricted Access (Mode 8)**	
□	**VERIFY**	**MCR** sees **Peers 7 □, 9 □, 11 □, 13 □, 15 □, 17 □** is in	**MODE 8**
	REMOVE	Connector from **Div A** Prim Beam Stop **G12-bsx.1**	
□	**VERIFY**	**MCR** sees **RHIC Reachback** is .	**Reachback**
□	**VERIFY**	**MCR** sees Primary Beam Stops: **G1BS □, G2BS □**	**IN**
□	**VERIFY**	**MCR** sees Rchback Beam Stop: **G3BS**	**IN**
□	**VERIFY**	**Visually** through viewport Prim Beam Stop **G12-bsx.1** is	**IN**
□	**VERIFY**	**Visually** through viewport Prim Beam Stop **G12-bsx.2** is	**IN**
□	**VERIFY**	**Visually** through viewport Rchback Beam Stop **G12-bsx.3** is	**IN**
	REPLACE	Connector on **Prim Beam Stop G12-bsx.1**	
	RESET	**RHIC** Reachback	
□	**VERIFY**	**MCR** sees **RHIC Reachback** is	**Reachback ok**
□	**VERIFY**	**MCR** sees Primary Beam Stops: **G1BS □, G2BS □**	**IN**
□	**VERIFY**	**MCR** sees Rchback Beam Stop: **G3BS**	**OUT**
□	**VERIFY**	**Visually** through viewport Prim Beam Stop **G12-bsx.1** is	**IN**
□	**VERIFY**	**Visually** through viewport Prim Beam Stop **G12-bsx.2** is	**IN**
□	**VERIFY**	**Visually** through viewport Rchback Beam Stop **G12-bsx.3** is	**OUT**

□ **Check for Confirmation of removing readback signal from Prim Beam Stop G12-bsx.1 causes a reachback; clear reachback**

1.6 Confirm removing readback signal from Prim Beam Stop G12-bsx.2 causes a reachback; clear reachback

	PLACE	**Peers 7, 9, 11, 13, 15, 17** in **Restricted Access (Mode 8)**	
□	**VERIFY**	**MCR** sees **Peers 7 □, 9 □, 11 □, 13 □, 15 □, 17 □** is in	**MODE 8**
	REMOVE	Connector from **Div B** Prim Beam Stop **G12-bsx.2**	
□	**VERIFY**	**MCR** sees **RHIC Reachback** is	**Reachback**
□	**VERIFY**	**MCR** sees **W Reachback** is	**Reachback**
□	**VERIFY**	**MCR** sees Primary Beam Stops: **G1BS □, G2BS □**	**IN**
□	**VERIFY**	**MCR** sees Rchback Beam Stop: **G3BS**	**IN**
□	**VERIFY**	**Visually** through viewport Prim Beam Stop **G12-bsx.2** is	**IN**
□	**VERIFY**	**Visually** through viewport Prim Beam Stop **G12-bsx.2** is	**IN**
□	**VERIFY**	**Visually** through viewport Rchback Beam Stop **G12-bsx.3** is	**IN**
	REPLACE	Connector on **Prim Beam Stop G12-bsx.2**	
	RESET	**RHIC** and **W** Reachbacks	
□	**VERIFY**	**MCR** sees **RHIC □** and **W □** Reachback are	**Reachback ok**
□	**VERIFY**	**MCR** sees Primary Beam Stops: **G1BS □, G2BS □**	**IN**
□	**VERIFY**	**MCR** sees Rchback Beam Stop: **G3BS**	**OUT**
□	**VERIFY**	**Visually** through viewport Prim Beam Stop **G12-bsx.2** is	**IN**
□	**VERIFY**	**Visually** through viewport Prim Beam Stop **G12-bsx.2** is	**IN**
□	**VERIFY**	**Visually** through viewport Rchback Beam Stop **G12-bsx.3** is	**OUT**

□ **Check for Confirmation of removing readback signal from Prim Beam Stop G12-bsx.2 causes a reachback; clear reachback**

END OF TEST PROCEDURE

TTL: Sign for completion of initial testing: _____

Date: _____/____/_____

TTL: Sign for completion of final testing: _____

Date: _____/____/_____

PASS ANNUAL ACCEPTANCE TEST PROTOCOL

Division A Software Filename and Checksum: Title:_____ Checksum: _____

Division B Software Filename and Checksum: Title:_____ Checksum: _____

Initial testing complete:

Test Team Leader's Name (Print): _____Life Number:_____

Test Team Leader's Name (Sign): _____Date:_____/_____/_____

Acceptance test procedure complete (following repairs and retesting if required):

Test Team Leader's Name (Print): _____ Life Number:_____

Test Team Leader's Name (Sign): _____Date:_____/_____/_____

Test results reviewed by:

Safety Section Head's Name (Print):_____ Life Number:_____

Safety Section Head's Name (Sign):_____Date:_____/_____/_____

Test results accepted by Radiation Safety Committee:

RSC Member's Name (Print):_____Life Number: _____

RSC Member's Name (Sign):_____Date:_____/_____/_____

1.1 Confirm in Mode 24 removal of 24VDC from Block A1 in CD Box at 1012A drops the peer to Mode 2, disables: Rhic CDs, Rhic Ijn CDs, Permit Link and causes a NG CDEVRIO

	PLACE	**Peer 13** in **No Access (Mode 24)**	
□	**VERIFY**	**Peer 13** is in	**MODE 24**
	WAIT	For **Beam Imminent Alarms** to **stop** sounding	
	PRESS	**RHIC Primary Beam Stop withdraw** button in **MCR**	
□	**VERIFY**	**MCR** sees Primary Beam Stop: **G1BS: Div A □, Div B □**	**OUT**
□	**VERIFY**	**MCR** sees Primary Beam Stop: **G2BS: Div A □, Div B □**	**OUT**
□	**VERIFY**	**MCR** sees **PSSWM**	**ENABLED**
□	**VERIFY**	**MCR** sees **PSXARC90**	**ENABLED**
□	**VERIFY**	**MCR** sees **PSYARC90**	**ENABLED**
□	**VERIFY**	**MCR** sees **Peer 13 Permit Link: Div A □, Div B □**	**ENABLED**
	REMOVE	24VDC to **Block A1,** in CD Box at **1012A**	
□	**VERIFY**	**MCR** sees at **Ijn Hw CDev RIO: Div A**	**NG Hw**
□	**VERIFY**	**Peer 13 Div A** is in	**MODE 2**
□	**VERIFY**	**MCR** sees Primary Beam Stop: **G1BS**	**A ≠ B**
□	**VERIFY**	**MCR** sees Primary Beam Stop: **G2BS**	**A ≠ B**
□	**VERIFY**	**MCR** sees **PSSWM**	**DISABLED**
□	**VERIFY**	**MCR** sees **PSXARC90**	**DISABLED**
□	**VERIFY**	**MCR** sees **PSYARC90**	**DISABLED**
□	**VERIFY**	**MCR** sees **Peer 13 Permit Link: Div A □ & Div B □**	**DISABLED**
□	**VERIFY**	**MCR** sees **W □ & Rhic □ Reachback**	**Reachback**
□	**VERIFY**	**MCR** sees **G3 BS**	**IN**
	REPLACE	24VDC to **Block A1, 1012A**	
	RESET	**NG CDev RIO**	
□	**VERIFY**	**MCR** sees at **Ijn Hw CDev RIO: Div A**	**OK**
	RESET	**W & Rhic Reachbacks**	
□	**VERIFY**	**MCR** sees **W □ & Rhic □ Reachback**	**OK**

□ **Check for confirmation of Mode 24 removal of 24VDC from Block A1 in cd Box at 1012A, drops the peer to Mode 2, disables: Rhic CDs, Rhic Ijn CDs, Permit Link and causes a NG CDev RIO**

1.2 Confirm in Mode 24 removal of Remote I/O cable from Scanner Module in Peer 13A in 1012A, drops the peer to Mode 2, disables: Rhic CDs, Rhic Ijn CDs, Permit Link and causes a NG CDEVRIO

	PLACE	**Peer 13** in **No Access (Mode 24)**	
□	**VERIFY**	**Peer 13** is in	**MODE 24**
	WAIT	For **Beam Imminent Alarms** to **stop** sounding	
	PRESS	**RHIC Primary Beam Stop withdraw** button in **MCR**	
□	**VERIFY**	**MCR** sees Primary Beam Stop: **G1BS: Div A □, Div B □**	**OUT**
□	**VERIFY**	**MCR** sees Primary Beam Stop: **G2BS: Div A □, Div B □**	**OUT**
□	**VERIFY**	**MCR** sees **PSSWM**	**ENABLED**
□	**VERIFY**	**MCR** sees **PSXARC90**	**ENABLED**

□	**VERIFY**	**MCR** sees **PSYARC90**	**ENABLED**
□	**VERIFY**	**MCR** sees **Peer 13 Permit Link: Div A □ & Div B □**	**ENABLED**
	UNPLUG	Remote **I/O cable** from **Scanner module Peer 13A**	
□	**VERIFY**	**MCR** sees at **Ijn Hw CDev RIO: Div A**	**NG Hw**
□	**VERIFY**	**Peer 13 Div A** is in	**MODE 2**
□	**VERIFY**	**MCR** sees Primary Beam Stop: **G1BS**	**A ≠ B**
□	**VERIFY**	**MCR** sees Primary Beam Stop: **G2BS**	**A ≠ B**
□	**VERIFY**	**MCR** sees **PSSWM**	**DISABLED**
□	**VERIFY**	**MCR** sees **PSXARC90**	**DISABLED**
□	**VERIFY**	**MCR** sees **PSYARC90**	**DISABLED**
□	**VERIFY**	**MCR** sees **Peer 13 Permit Link: Div A □ & Div B □**	**DISABLED**
□	**VERIFY**	**MCR** sees **W Reachback**	**Reachback**
	REPLACE	Remote **I/O cable** in **Scanner module Peer 13A**	
	RESET	**NG CDev RIO**	
□	**VERIFY**	**MCR** sees at **Ijn Hw CDev RIO: Div A**	**OK**
	RESET	**W Reachback**	
□	**VERIFY**	**MCR** sees **W Reachback**	**OK**

□ **Check for confirmation in Mode 24 removal of Remote I/O cable from Scanner Module in Peer 13A in 1012A, drops the peer to Mode 2, disables: Rhic CDs, Rhic Ijn CDs, Permit Link and causes a CDev RIO**

1.3 Confirm in Mode 24 removal of 24VDC from Block B1 in CD Box at 1012A drops the peer to Mode 2, disables: Rhic CDs, Rhic Ijn CDs, Permit Link and causes a NG CDev RIO

	PLACE	**Peer 13** in **No Access (Mode 24)**	
□	**VERIFY**	**Peer 13** is in	**MODE 24**
	WAIT	For **Beam Imminent Alarms** to **stop** sounding	
	PRESS	**RHIC Primary Beam Stop withdraw** button in **MCR**	
□	**VERIFY**	**MCR** sees Primary Beam Stop: **G1BS: Div A □, Div B □**	**OUT**
□	**VERIFY**	**MCR** sees Primary Beam Stop: **G2BS: Div A □, Div B □**	**OUT**
□	**VERIFY**	**MCR** sees **PSSWM**	**ENABLED**
□	**VERIFY**	**MCR** sees **PSXARC90**	**ENABLED**
□	**VERIFY**	**MCR** sees **PSYARC90**	**ENABLED**
□	**VERIFY**	**MCR** sees **RHIC Permit Link: Div A □ & Div B □**	**ENABLED**
	REMOVE	24VDC to **Block B1, 1012A**	
□	**VERIFY**	**MCR** sees at **Ijn Hw CDev RIO: Div B**	**NG Hw**
□	**VERIFY**	**Peer 13 Div B □ & Div A □** are in	**MODE 2**
□	**VERIFY**	**MCR** sees Primary Beam Stop: **G1BS**	**A ≠ B**
□	**VERIFY**	**MCR** sees Primary Beam Stop: **G2BS**	**A ≠ B**
□	**VERIFY**	**MCR** sees **PSSWM**	**DISABLED**
□	**VERIFY**	**MCR** sees **PSXARC90**	**DISABLED**
□	**VERIFY**	**MCR** sees **PSYARC90**	**DISABLED**
□	**VERIFY**	**MCR** sees **RHIC Permit Link: Div B**	**DISABLED**
□	**VERIFY**	**MCR** sees **W □ & Rhic □ Reachback**	**Reachback**

	REPLACE	24VDC to **Block B1, 1012A**	
	RESET	**NG CDev RIO**	
□	**VERIFY**	**MCR** sees at **Ijn Hw CDev RIO: Div A**	**OK**
	RESET	**W & Rhic Reachbacks**	
□	**VERIFY**	**MCR** sees **W □ & Rhic □ Reachback**	**OK**

□ **Check for confirmation of Mode 24 removal of 24VDC from Block B1 in CD Box at 1012A, drops the peer to Mode 2, disables: Rhic CDs, Rhic Ijn CDs, Permit Link and causes a NG CDev RIO**

1.4 Confirm in Mode 24 removal of Remote I/O cable from Scanner Module in Peer 13B in 1012A, drops the peer to Mode 2, disables: Rhic CDs, Rhic Ijn CDs, Permit Link and causes a NG CDev RIO

	PLACE	**Peer 13** in **No Access (Mode 24)**	
□	**VERIFY**	**Peer 13** is in	**MODE 24**
	WAIT	For **Beam Imminent Alarms** to **stop** sounding	
	PRESS	**RHIC Primary Beam Stop withdraw** button in **MCR**	
□	**VERIFY**	**MCR** sees Primary Beam Stop: **G1BS: Div B □, Div B □**	**OUT**
□	**VERIFY**	**MCR** sees Primary Beam Stop: **G2BS: Div B □, Div B □**	**OUT**
□	**VERIFY**	**MCR** sees **PSSWM**	**ENABLED**
□	**VERIFY**	**MCR** sees **PSXARC90**	**ENABLED**
□	**VERIFY**	**MCR** sees **PSYARC90**	**ENABLED**
□	**VERIFY**	**MCR** sees **RHIC Permit Link: Div A □ & Div B □**	**ENABLED**
	UNPLUG	Remote **I/O cable** from **Scanner module Peer 13B**	
□	**VERIFY**	**MCR** sees at **Ijn Hw CDev RIO: Div B**	**NG Hw**
□	**VERIFY**	**Peer 13 Div A □ & Div B □** are in	**MODE 2**
□	**VERIFY**	**MCR** sees Primary Beam Stop: **G1BS**	**A ≠ B**
□	**VERIFY**	**MCR** sees Primary Beam Stop: **G2BS**	**A ≠ B**
□	**VERIFY**	**MCR** sees **PSSWM**	**DISABLED**
□	**VERIFY**	**MCR** sees **PSXARC90**	**DISABLED**
□	**VERIFY**	**MCR** sees **PSYARC90**	**DISABLED**
□	**VERIFY**	**MCR** sees **RHIC Permit Link: Div A □ & Div B □**	**DISABLED**
□	**VERIFY**	**MCR** sees **W □ & Rhic □ Reachback**	**Reachback**
	REPLACE	Remote **I/O cable** in **Scanner module Peer 13B**	
	RESET	**NG CDev RIO**	
□	**VERIFY**	**MCR** sees at **Ijn Hw CDev RIO: Div A**	**OK**
	RESET	**W & Rhic Reachbacks**	
□	**VERIFY**	**MCR** sees **W □ & Rhic □ Reachback**	**OK**

□ **Check for confirmation in Mode 24 removal of Remote I/O cable from Scanner Module in Peer 13B in 1012A, drops the peer to Mode 2, disables: Rhic CDs, Rhic Ijn CDs, Permit Link and causes a NG CDev RIO**

END OF TEST PROCEDURE

TTL: Sign for completion of initial testing: _____

Date: _____/____/_____

TTL: Sign for completion of final testing: _____

Date: _____/____/_____

4.120.18.j.1 RHIC ROLL-UP RF KEYTREE TESTS

PASS ANNUAL ACCEPTANCE TEST PROTOCOL

Division A Software Filename and Checksum: Title:_____ Checksum: _____

Division B Software Filename and Checksum: Title:_____ Checksum: _____

Initial testing complete:

Test Team Leader's Name (Print): _____Life Number:_____

Test Team Leader's Name (Sign): _____Date:_____/_____/_____

Acceptance test procedure complete (following repairs and retesting if required):

Test Team Leader's Name (Print): _____ Life Number:_____

Test Team Leader's Name (Sign): _____Date:_____/_____/_____

Test results reviewed by:

Safety Section Head's Name (Print):_____ Life Number:_____

Safety Section Head's Name (Sign):_____Date:_____/_____/_____

Test results accepted by Radiation Safety Committee:

RSC Member's Name (Print):_____Life Number: _____

RSC Member's Name (Sign):_____Date:_____/_____/_____

1.1 Confirm Remote Reset function of the RF Key Tree from MCR

□	**VERIFY**	**RF Transfer** key is in **MCR** and is	**CAPTURED**
	PLACE	**Peer 9** in **Safe Access (Mode 2)**	
□	**VERIFY**	**MCR** sees **Peer 9** is in	**MODE 2**
□	**VERIFY**	3 ea **#10 RF CA** keys & 2 ea **#11 RF Sweep** keys are	**CAPTURED**
□	**VERIFY**	**RF Key Tree Complete** indicator is	**ON**
□	**VERIFY**	**RF Reset** indicator is	**OFF**
	REMOVE	The last **#11 Sweep Key**	
□	**VERIFY**	**RF Key Tree Complete** indicator is	**OFF**
□	**VERIFY**	**RF Reset** indicator is	**OFF**
	CAPTURE	The last **#11 Sweep Key**	
□	**VERIFY**	**RF Key Tree Complete** indicator is	**OFF**
□	**VERIFY**	**RF Reset** indicator is	**ON**
□	**VERIFY**	**Attempt** to **reset** gate **4GE2**	**FAIL**
	PLACE	**Peer 9** in **Restricted Access (Mode 8)**	
□	**VERIFY**	**MCR** sees **Peer 9** is in	**MODE 8**
□	**VERIFY**	**Attempt** to **reset** gate **4GE2**	**FAIL**
	PLACE	**Peer 9** in **Controlled Access (Mode 16)**	
□	**VERIFY**	**MCR** sees **Peer 9** is in	**MODE 16**
□	**VERIFY**	**Attempt** to **reset** gate **4GE2** is	**SUCCESSFUL**

□ **Check for confirmation of Remote Reset function of the RF Key Tree from MCR**

1.2 Confirm normal move to MODE 24 and MODE 26 is possible.

	PLACE	**Peer 9** in **Controlled Access (Mode 16)**	
□	**VERIFY**	**MCR** sees **Peer 9** is in	**MODE 16**
	CLOSE	**Gate** 5GS1	
	RESET	Gates: **3GI1, 3EL1, 4MD1, 4GE1, 4MD2, 4GE2, 4GI1, 4EL1, 4GE3, 4ED1**	
□	**VERIFY**	Gates: **3GI1 □, 3EL1 □, 4MD1 □, 4GE1 □, 4MD2 □, 4GE2 □, 4GI1 □, 4EL1 □, 4GE3 □, 4ED1 □** are	**RESET**
	SWEEP	Zones: **4Z1, 4Z2**	
□	**VERIFY**	Zones: **4Z1 □, 4Z2 □** are	**SWEPT**
□	**VERIFY**	3 ea **#10 RF CA** keys and 2 ea **#11 RF Sweep** keys are	**CAPTURED**
□	**VERIFY**	**RF Key Tree Complete** indicator is	**ON**
□	**VERIFY**	**RF Reset** indicator is	**OFF**
□	**VERIFY**	Attempt to place **Peer 9** in **No Access (Mode 24)** is	**SUCCESSFUL**
	PLACE	**Peer 9** in **Controlled Access (Mode 16)**	
□	**VERIFY**	**MCR** sees **Peer 9** is in	**MODE 16**
□	**VERIFY**	Attempt to place **Peer 9** in **RF No Access (Mode 26)** is	**SUCCESSFUL**
	PLACE	**Peer 9** in **Controlled Access (Mode 16)**	
□	**VERIFY**	**MCR** sees **Peer 9** is in	**MODE 16**

□ **Check for confirmation of normal move to MODE 24 and MODE 26 is possible.**

1.3 Confirm RF Key Tree complete is necessary for move to MODE 24 or MODE 26

PLACE **Peer 9** in **Controlled Access (Mode 16)**
□ **VERIFY** **MCR** sees **Peer 9** is in **MODE 16**
FOLLOW Table 1 below

Key	Turn Key to OFF position	Verify Key Active light ON	Verify Reset light OFF	Verify Key Tree Complete Light OFF	Verify cannot go into Mode 24	Verify cannot go into Mode 26	Turn Key to ON position
RF CA #1		□	□	□	□	□	
RF CA #2		□	□	□	□	□	
RF CA #3		□	□	□	□	□	
RF Sweep #1		□	□	□	□	□	
RF Sweep #2		□	□	□	□	□	

Table – 1: Test of RF Key Tree Complete is necessary for move to Mode 24 or Mode 26

□ **Check for confirmation of RF Key Tree complete is necessary for move to MODE 24 or MODE 26**

1.4 Confirm in Mode 24 removal of key from RF Key Tree will drop Peer 9 to Mode 2

PLACE **Peer 9 in No Access (Mode 24)**
□ **VERIFY** **MCR** sees **Peer 9** in **MODE 24**
FOLLOW Table 2 below

	Peer 9 to Mode 24	Turn key OFF	Verify Key Active light ON	Verify Key Tree Complete Light OFF	Verify Peer 9 moved to Mode 2	Turn key ON	Verify Key Active light OFF	Verify Key Tree Complete Light ON
RF CA #1			□	□	□		□	□
RF CA #2			□	□	□		□	□
RF CA #3			□	□	□		□	□
RF Sweep #1			□	□	□		□	□
RF Sweep #2			□	□	□		□	□

Table - 2: In Mod 24 test of removal of key from RF Key Tree

□ **Check for confirmation in Mode 24 removal of key from RF Key Tree will drop Peer 9 to Mode 2**

1.5 Confirm in Mode 26 removal of key from RF Key Tree will drop Peer 9 to Mode 2

PLACE **Peer 9 in RF No Access (Mode 26)**
□ **VERIFY** **MCR** sees **Peer 9** in **MODE 26**
FOLLOW **Table 3** below

	Peer 9 to Mode 26	Turn key OFF	Verify Key Active light ON	Verify Key Tree Complete Light OFF	Verify Peer 9 moved to Mode 2	Turn key ON	Verify Key Active light OFF	Verify Key Tree Complete Light ON
RF CA #1			□	□	□		□	□
RF CA #2			□	□	□		□	□
RF CA #3			□	□	□		□	□
RF Sweep #1			□	□	□		□	□
RF Sweep #2			□	□	□		□	□

Table - 3 In Mode 26 test of removal of key from RF Key Tree

□ **Check for confirmation in Mode 26 removal of key from RF Key Tree will drop Peer 9 to Mode 2**

1.6 Confirm Excess #11 RF Sweep key at MCR will drop Peer 9 from Mode 24 to Mode 2

PLACE **Peer 9 in No Access (Mode 24)**
□ **VERIFY** **MCR** sees **Peer 9** in **MODE 24**

□ **VERIFY** **RF Key Tree Complete** indicator is **ON**
□ **VERIFY** **RF Reset** indicator is **OFF**

ATTEMPT To turn **excess #11 RF Sweep key in Reset tumbler at MCR**

□ **VERIFY** **MCR** sees **Peer 9** moved to **MODE 2**
REMOVE Excess **#11 RF Sweep key from Reset tumbler**

□ **Check for confirmation of excess #11 RF Sweep key at MCR will drop Peer 9 from Mode 24 to Mode 2**

1.7 Confirm Excess #11 RF Sweep key at MCR will drop Peer 9 from Mode 26 to Mode 2

PLACE **Peer 9 in No Access (Mode 26)**
□ **VERIFY** **MCR** sees **Peer 9** in **MODE 26**

□ **VERIFY** **RF Key Tree Complete** indicator is **ON**
□ **VERIFY** **RF Reset** indicator is **OFF**

ATTEMPT To turn **excess #11 RF Sweep key in Reset tumbler at MCR**

□ **VERIFY** **MCR** sees **Peer 9** moved to **MODE 2**

REMOVE Excess **#11 RF Sweep key** from Reset tumbler

□ **Check for confirmation of excess #11 RF Sweep key at MCR will drop Peer 9 from Mode 26 to Mode 2**

1.8 Confirm keyswitch integrity of keys in RF Key Tree in Mode 8 Key	**Verify All Peers in Mode 8**	**Turn Key OFF**	**Verify Key Active light ON**	**Verify Key Tree Complete light OFF**	**Verify all Peers remain in Mode 8**	**Turn key ON**	**Verify Key Active light OFF**	**Verify Key Tree Complete light ON**	**Next key**
RF CA #1	□		□	□	□		□	□	
RF CA #2	□		□	□	□		□	□	
RF CA #3	□		□	□	□		□	□	
RF CA #4	□		□	□	□		□	□	
RF CA #5	□		□	□	□		□	□	
RF CA #6	□		□	□	□		□	□	
RF Sweep #1	□		□	□	□		□	□	
RF Sweep #2	□		□	□	□		□	□	End of test

□ **PLACE** Keyswitch in **Restricted Access (Mode 8)**

□ **VERIFY** **MCR** sees **Peers: 5** □, **7** □, **9** □, **11** □, **13** □, **15** □, **17** □ in **MODE 8**

FOLLOW **Table 4** below

Table - 4 Test in Mode 8 of keyswitch integrity of keys in RF Key Tree

□ **Check for acceptance of Confirm keyswitch integrity of keys in RF Key Tree in Mode 8**

END OF TEST PROCEDURE

TTL: Sign for completion of initial testing: _____

Date: _____/____/_____

TTL: Sign for completion of final testing: _____

Date: _____/____/_____

PASS ANNUAL ACCEPTANCE TEST PROTOCOL

Division A Software Filename and Checksum: Title:_____ Checksum: _____

Division B Software Filename and Checksum: Title:_____ Checksum: _____

Initial testing complete:

Test Team Leader's Name (Print): _____Life Number:_____

Test Team Leader's Name (Sign): _____Date:_____/_____/_____

Acceptance test procedure complete (following repairs and retesting if required):

Test Team Leader's Name (Print): _____ Life Number:_____

Test Team Leader's Name (Sign): _____Date:_____/_____/_____

Test results reviewed by:

Safety Section Head's Name (Print):_____ Life Number:_____

Safety Section Head's Name (Sign):_____Date:_____/_____/_____

Test results accepted by Radiation Safety Committee:

RSC Member's Name (Print):_____Life Number: _____

RSC Member's Name (Sign):_____Date:_____/_____/_____

1.1 Confirm Remote Reset function of the RHIC Key Tree from MCR

□	**VERIFY**	**RF Transfer** key is in **MCR** and is	**CAPTURED**
□	**VERIFY**	24 ea **#14 RHIC CA** keys & 6 ea **#15 RHIC Sweep** keys are	**CAPTURED**
□	**VERIFY**	**RHIC Key Tree Complete** indicator is	**ON**
□	**VERIFY**	**RHIC Reset** indicator is	**OFF**
	REMOVE	The last **#15 Sweep Key**	
□	**VERIFY**	**RHIC Key Tree Complete** indicator is	**OFF**
□	**VERIFY**	**RHIC Reset** indicator is	**OFF**
	CAPTURE	The last **#15 Sweep Key**	
□	**VERIFY**	**RHIC Key Tree Complete** indicator is	**OFF**
□	**VERIFY**	**RHIC Reset** indicator is	**ON**
	PLACE	**Peers 7, 9, 11, 13, 15, 17** in **Safe Access (Mode 2)**	
□	**VERIFY**	**MCR** sees **Peers 7 □, 9 □, 11 □, 13 □, 15 □, 17 □** is in	**MODE 2**
□	**VERIFY**	**Attempt** to **reset** gates: **12GE1 □, 2GE1 □, 4GE2 □, 6GE1 □, 8GE2 □, 10GE1 □**	**FAIL**
	PLACE	**Peers 7, 9, 11, 13, 15, 17** in **Restricted Access (Mode8)**	
□	**VERIFY**	**MCR** sees **Peers 7 □, 9 □, 11 □, 13 □, 15 □, 17 □** is in	**MODE 8**
□	**VERIFY**	**Attempt** to **reset** gates: **11GS1 □, 2GE2 □, 4GE3 □, 6GE2 □, 7GE1 □, 10GI1 □**	**FAIL**
	PLACE	**Peers 7, 9, 11, 13, 15, 17** in **Controlled Access (Mode16)**	
□	**VERIFY**	**MCR** sees **Peers 7 □, 9 □, 11 □, 13 □, 15 □, 17 □** is in	**MODE 16**
□	**VERIFY**	**Attempt** to **reset** gates in **Table – 1,** below	**SUCCESSFUL**

Gate	Verify reset O.K. in Mode 16	Gate	Verify reset O.K. in Mode 16	Gate	Verify reset O.K. in Mode 16	Gate	Verify reset O.K. in Mode 16
11GS1	□	**2GE1**	□	**6GE2**	□	**9GI1**	□
11GI1	□	**2GE2**	□	**6GE3**	□	**10GE1**	□
12GE1	□	**4GE3**	□	**7GS1**	□	**10GI1**	□
12GI1	□	**5GS1**	□	**7GE1**	□	**XXXX**	**XXXXX**
1GS1	□	**5GE1**	□	**8GE2**	□	**XXXX**	**XXXXX**
1GI1	□	**6GE1**	□	**9GS1**	□	**XXXX**	**XXXXX**

Table – 1: Test of the Remote Reset function from the RHIC Key tree in MCR

□ **Check for confirmation of Remote Reset function of the RHIC Key Tree from MCR**

1.2 Confirm normal move to MODE 24 is possible.

	PLACE	**Peers 7, 9, 11, 13, 15, 17** in **Controlled Access (Mode16)**	
□	**VERIFY**	**MCR** sees **Peers 7 □, 9 □, 11 □, 13 □, 15 □, 17 □** is in	**MODE 16**
□	**VERIFY**	**All gates are**	**RESET**
□	**VERIFY**	**All Zones are**	**SWEPT**
□	**VERIFY**	24 ea **#14 RHIC CA** keys & 6 ea **#15 RHIC Sweep** keys are	**CAPTURED**
□	**VERIFY**	**RHIC Key Tree Complete** indicator is	**ON**
□	**VERIFY**	**RHIC Reset** indicator is	**OFF**
□	**VERIFY**	3 ea **#10 RF CA** keys and 2 ea **#15 RF Sweep** keys are	**CAPTURED**
□	**VERIFY**	**RF Key Tree Complete** indicator is	**ON**
□	**VERIFY**	**RF Reset** indicator is	**OFF**
□	**VERIFY**	Attempt to place **Peer 7, 9, 11, 13, 15, 17 No Access (Mode 24)** is	**SUCCESSFUL**
	PLACE	**Peer 7, 9, 11, 13, 15, 17** in **Controlled Access (Mode 16)**	
□	**VERIFY**	**MCR** sees **Peer 7 □, 9 □, 11 □, 13 □, 15 □, 17 □** in	**MODE 16**

□ **Check for confirmation of normal move to MODE 24 is possible.**

1.3 Confirm RHIC Key Tree complete is necessary for move to MODE 24

	PLACE	**Peer 7, 9, 11, 13, 15, 17** in **Controlled Access (Mode 16)**	
□	**VERIFY**	**MCR** sees **Peer 7 □, 9 □, 11 □, 13 □, 15 □, 17 □** in	**MODE 16**
	FOLLOW	Table 2 below	

Key	Turn Key to OFF position	Verify Key Active light ON	Verify Reset light OFF	Verify Key Tree Complete Light OFF	Verify cannot go into Mode 24	Turn Key to ON position
1st Row -RHIC CA #1		□	□	□	□	
1st Row -RHIC CA #3		□	□	□	□	
2nd Row -RHIC CA #8		□	□	□	□	
2nd Row –RHIC CA #12		□	□	□	□	
3rd Row –RHIC CA #15		□	□	□	□	
3rd Row –RHIC CA #17		□	□	□	□	
4th Row –RHIC CA #22		□	□	□	□	
4th Row –RHIC CA #23		□	□	□	□	
RHIC Sweep #1		□	□	□	□	
RHIC Sweep #6		□	□	□	□	

Table – 2: Test of RHIC Key Tree Complete is necessary for move to Mode 24

□ **Check for confirmation of RHIC Key Tree complete is necessary for move to MODE 24**

Key1.4 Confirm in Mode 24 removal of key from Key Tree will drop System to Mode 2 PLACE Peer 7, 9, 11, 13, 15, 17 in No Access (Mode 24) VERIFY MCR sees Peer 7 □, 9 □, 11 □, 13 □, 15 □, 17 □ in MODE 24 FOLLOW Table 3 below	All Peers to Mode 24	Turn key OFF	Verify Key Active light ON	Verify Key Tree Complete Light OFF	Verify all Peers moved to Mode 2	Turn key ON	Verify Key Active light OFF	Verify Key Tree Complete Light ON
1st Row -RHIC CA #2			□	□	□		□	□
1st Row -RHIC CA #4			□	□	□		□	□
2nd Row -RHIC CA #7			□	□	□		□	□
2nd Row -RHIC CA #10			□	□	□		□	□
3rd Row -RHIC CA #13			□	□	□		□	□
3rd Row -RHIC CA #18			□	□	□		□	□
4th Row -RHIC CA #20			□	□	□		□	□
4th Row -RHIC CA #21			□	□	□		□	□
RHIC Sweep #2			□	□	□		□	□
RHIC Sweep #5			□	□	□		□	□
RF CA # 2			□	□	□		□	□
RF Sweep #1			□	□	□		□	□

Table - 3: Test in Mode 24 of removal of key from Key Tree will drop System to Mode 2

□ **Check for confirmation in Mode 24 removal of key from Key Tree will drop System to Mode 2**

1.6 Confirm Excess #15 RHIC Sweep key at MCR will drop System from Mode 24 to Mode 2

□	**VERIFY**	24 ea **#14 RHIC CA** keys & 6 ea **#15 RHIC Sweep** keys are	**CAPTURED**
	PLACE	**Peer 7, 9, 11, 13, 15, 17** in **No Access (Mode 24)**	
□	**VERIFY**	**MCR** sees **Peer 7 □, 9 □, 11 □, 13 □, 15 □, 17 □** in	**MODE 24**
□	**VERIFY**	**RHIC Key Tree Complete** indicator is	**ON**
□	**VERIFY**	**RHIC Reset** indicator is	**OFF**
	ATTEMPT	To turn **excess #15 RHIC Sweep key in Reset tumbler at MCR**	
□	**VERIFY**	**MCR** sees **All Peers** moved to	**MODE 2**
	REMOVE	Excess **#15 RHIC Sweep key from Reset tumbler**	

□ **Check for confirmation of excess #15 RHIC Sweep at MCR key will drop System from Mode 24 to Mode 2**

1.8 Confirm keyswitch integrity of keys in Rhic Key Tree in Mode 8

	PLACE	**Peer 7, 9, 11, 13, 15, 17** in **Restricted Access (Mode 8)**	
□	**VERIFY**	**MCR** sees **Peer 7 □, 9 □, 11 □, 13 □, 15 □, 17 □** in	**MODE 8**
	FOLLOW	**Table 4** below	

1.7 Confirm Excess #11 RF Sweep key at MCR will drop System from Mode 24 to Mode 2

□	**VERIFY**	24 ea **#14 RHIC CA** keys & 6 ea **#15 RHIC Sweep** keys are	**CAPTURED**
	PLACE	**Peer 7, 9, 11, 13, 15, 17** in **No Access (Mode 24)**	
□	**VERIFY**	**MCR** sees **Peer 7 □, 9 □, 11 □, 13 □, 15 □, 17 □** in	**MODE 24**
□	**VERIFY**	**RHIC Key Tree Complete** indicator is	**ON**
□	**VERIFY**	**RHIC Reset** indicator is	**OFF**
	ATTEMPT	To turn **excess #11 RF Sweep key in RF Reset tumbler at MCR**	
□	**VERIFY**	**MCR** sees **All Peers** moved to	**MODE 2**
	REMOVE	Excess **#11 RHIC Sweep key from Reset tumbler**	

□ **Check for confirmation of excess #11 RF Sweep key at MCR will drop System from Mode 24 to Mode 2**

Key	Verify all Peers in Mode 8	Turn key OFF	Verify Key Active light ON	Verify Key Tree Complete light OFF	Verify all Peers remain in Mode 8	Turn key ON	Verify Key Active light OFF	Verify Key Tree Complete Light ON	Go to next key
1st Row -RHIC CA #1	□		□	□	□		□	□	
1st Row -RHIC CA #2	□		□	□	□		□	□	
1st Row -RHIC CA #3	□		□	□	□		□	□	
1st Row -RHIC CA #4	□		□	□	□		□	□	
1st Row -RHIC CA #5	□		□	□	□		□	□	
1st Row -RHIC CA #6	□		□	□	□		□	□	
2nd Row -RHIC CA #7	□		□	□	□		□	□	
2nd Row -RHIC CA #8	□		□	□	□		□	□	
2nd Row -RHIC CA #9	□		□	□	□		□	□	
2nd Row -RHIC CA #10	□		□	□	□		□	□	
2nd Row -RHIC CA #11	□		□	□	□		□	□	
2nd Row -RHIC CA #12	□		□	□	□		□	□	
3rd Row -RHIC CA #13	□		□	□	□		□	□	
3rd Row -RHIC CA #14	□		□	□	□		□	□	
3rd Row -RHIC CA #15	□		□	□	□		□	□	
3rd Row -RHIC CA #16	□		□	□	□		□	□	
3rd Row -RHIC CA #17	□		□	□	□		□	□	
3rd Row -RHIC CA #18	□		□	□	□		□	□	
4th Row -RHIC CA #19	□		□	□	□		□	□	
4th Row -RHIC CA #20	□		□	□	□		□	□	
4th Row -RHIC CA #21	□		□	□	□		□	□	
4th Row -RHIC CA #22	□		□	□	□		□	□	
4th Row -RHIC CA #23	□		□	□	□		□	□	
4th Row -RHIC CA #24	□		□	□	□		□	□	
RHIC Sweep #1	□		□	□	□		□	□	
RHIC Sweep #2	□		□	□	□		□	□	
RHIC Sweep #3	□		□	□	□		□	□	
RHIC Sweep #4	□		□	□	□		□	□	
RHIC Sweep #5	□		□	□	□		□	□	
RHIC Sweep #6	□		□	□	□		□	□	**End of test**

Table - 4: Test in Mode 8 of keyswitch integrity of keys in Rhic Key Tree

□ **Check for acceptance of Confirm keyswitch integrity of keys in Rhic Key Tree in Mode 8**

END OF TEST PROCEDURE

TTL: Sign for completion of initial testing: _____

Date: _____/____/_____

TTL: Sign for completion of final testing: _____

Date: _____/____/_____